

Claims

- [1] A method of manufacturing liquid crystal display device comprising the steps of: forming an organic material film having projections and depressions, using a photo-embossing material, on an insulating film on an underlying electrode in a thin-film transistor of an active-matrix liquid crystal display device; exposing said insulating film in a contact-hole-forming-area by reducing a thickness of said organic material film by a dry etching to said organic material film; and forming a contact hole by a dry etching to the exposed insulating film.
- [2] A method as claimed in claim 1, further comprising the steps of: exposing said underlying electrode in forming said contact hole; and contacting the exposed underlying electrode with a reflective electrode by forming said reflective electrode on the resulting structure.
- [3] A method as claimed in claim 1 or 2, wherein said photo-embossing material is a material patternable by an exposing step and a baking step.
- [4] A method as claimed in claim 3, wherein said organic material film is formed by exposing and baking said photo-embossing material in forming said organic material film.
- [5] A method as claimed in claim 4, wherein a halftone mask or a diffraction mask is used in exposing.
- [6] A method as claimed in any one of claims 1 to 5, wherein the dry processes are performed from the step of forming said organic material film to the step of forming said contact hole.
- [7] A method as claimed in any one of claims 1 to 6, wherein the step of exposing said insulating film and the step of forming said contact hole are performed in a single apparatus.
- [8] A method as claimed in any one of claims 1 to 7, wherein a dry etching process in the step of exposing said insulating film is performed in an Inductively Coupled Plasma mode or a reactive ion etching mode.
- [9] A method as claimed in any one of claims 1 to 8, wherein said liquid crystal display device is a reflective type of liquid crystal display device or a transfective type of liquid crystal display device.